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**Patent Claims**

1. Method of treatment or prophylaxis of diseases associated with or based on impairment or dysfunction of cerebral vascular reactivity in a patient afflicted with such disease comprising the step of administering a pharmacologically tolerable and therapeutically effective amount of a PDE5 inhibitor to the patient.
2. Method of treatment according to claim 1 wherein the disease is associated with pre-senile dementia.
3. Method of treatment according to claim 1 or 2, wherein the disease is selected from the group of vascular- and/or neuronal dementia, diabetes associated impairments of neurovascular-coupling, impairments of cerebral vascular function secondary to systemic arterial hypertension and/or arteriosclerosis, Alzheimer's disease, Parkinson disease and Huntington's disease.
4. Method of treatment according to claim 1, wherein the disease is associated with or based on post-ischemic disturbances of cerebral function.
5. Method according to claim 1 or 4, wherein the disease is based on cerebral insults, stenosis of extra- or intra-cerebral arteries or cerebral bleeding.
6. Method according to claim 1, wherein the disease is associated with impairments of cognitive function associated microcirculatory disorders/dysfunction.
7. Method according to claim 1 or 6, wherein the disease is selected from the group of septic encephalopathy, arteriosclerotic encephalopathy, diabetes associated encephalopathy, toxic encephalopathy, multiple sclerosis, Creutzfeldt-Jakob disease, encephalopathy associated with autoimmune thyroiditis (Hashimoto's encephalitis), autoimmune thyroiditis, cerebral microangiopathy, hypercholesterolemia, hypertriglyceridemia, hypertension, pulmonary hypertension, peripheral arterial disease, chronic renal failure, chronic heart failure, sepsis, preeclampsia, celiac disease.
8. Method according to claim 1, 6 or 7, wherein the disease is sepsis associated encephalopathy (SAE).
9. Method according to any of the preceding claims wherein the PDE 5 inhibitor is selected from the group of sildenafil, vardenafil and tadalafil.

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- 10.** Method of treatment or prophylaxis of any of the diseases as indicated in any of the claims 2 to 7 in a patient afflicted with such disease comprising the step of administering a pharmaceutically tolerable and therapeutically effective amount of compound capable to improve cerebral vascular reactivity and to influence kinetic adaptation of cerebral blood flow.
- 11.** Use of a PDE5 inhibitor for the manufacture of a medicament for the treatment or prophylaxis of diseases associated with or based on impairment or dysfunction of cerebral vascular reactivity in a patient afflicted with such disease.
- 12.** Use according to claim 9, wherein the disease is associated with pre-senile dementia.
- 13.** Use according to claim 9 or 10, wherein the disease is selected from the group of vascular-and/or neuronal dementia, diabetes associated impairments of neurovascular-coupling, impairments of cerebral vascular function secondary to systemic arterial hypertension and/or arteriosclerosis, Alzheimer's disease, Parkinson disease and Huntington's disease.
- 14.** Use according to claim 9, wherein the disease is associated with or based on post-ischemic disturbances of cerebral function.
- 15.** Use according to claim 9 or 12, wherein the disease is based on cerebral insults, stenosis of extra- or intra-cerebral arteries or cerebral bleeding.
- 16.** Use according to claim 9, wherein the disease is associated with impairments of cognitive function associated microcirculatory disorders/dysfunction.
- 17.** Use according to claim 9 or 14, wherein the disease is selected from the group of septic encephalopathy, arteriosclerotic encephalopathy, diabetes associated encephalopathy, toxic encephalopathy, multiple sclerosis, Creutzfeldt-Jakob disease, encephalopathy associated with autoimmune thyroiditis (Hashimoto's encephalitis), autoimmune thyroiditis, cerebral microangiopathy, hypercholesterolemia, hypertriglyceridemia, hypertension, pulmonary hypertension, peripheral arterial disease, chronic renal failure, chronic heart failure, sepsis, preeclampsia, celiac disease.
- 18.** Use according to claim 9, 14 or 17, wherein the disease is sepsis associated encephalopathy (SAE).
- 19.** Use according to any of the preceding claims 9 to 15, wherein the PDE 5 inhibitor is selected from the group of sildenafil, vardenafil and tadalafil.

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- 20.** Use of a compound, which is capable to improve cerebral vascular reactivity and to influence kinetic adaptation of cerebral blood flow, for the manufacture of a medicament for the treatment or prophylaxis of any of the diseases as indicated in any of the claims 11 to 16.